

less had someone else occupied Henshaw's positions. Suffice it to say that I appreciated them then and now, and just as I told him on that cold snowy evening of December 29, 1933, when I last saw him, in his Fayerweather Street house, so now I repeat: I am grateful and I thank him.

PHILIP P. CALVERT.

---

### **Prothetely in *Scolytus multistriatus* Marsham (Coleop.: Scolytidae).**

By RAIMON L. BEARD and PHILIP P. WALLACE.  
Connecticut Agricultural Experiment Station,  
New Haven, Conn.

Prothetely, or the presence of pupal characteristics in the larval stage, has been reported in several families of Lepidoptera and Coleoptera. Earlier literature covering these reports has been summarized by Thomas (1933).

Since 1933, prothetely has been reported in *Epilachna varivestris* (*E. corrupta*) by Landis and Davidson (1934), in *Tribolium confusum* by Oosthuizen and Shepard (1936), and in *Melanotus longulus* by Stone (1938).

Observation of several cases of this developmental abnormality among larvae of the elm bark beetle, *Scolytus multistriatus* Marsham, adds a representative of the family Scolytidae to the list of Coleoptera exhibiting this phenomenon.

The larvae of this beetle are typically scolytoid in form and do not normally possess legs. The pupal stage of the insect is preceded by a short prepupal period which is characterized by an enlargement of the thoracic region, with the presence of bulbous structures indicative of the future legs. The prothetely observed is chiefly marked by the presence of legs which are readily distinguished from these prepupal protuberances.

The specimen showing the greatest development of "pupal" characteristics possessed both legs and wing pads. The legs were conspicuous, having the shape illustrated in Figure 1, B.

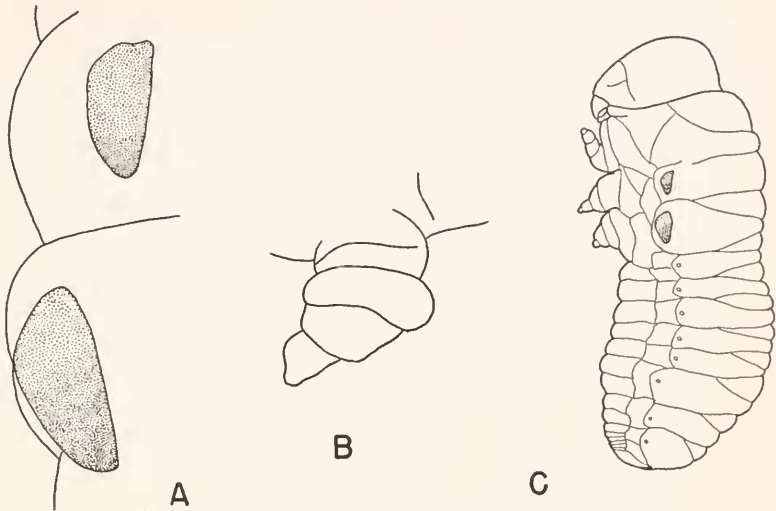


Fig. 1. Prothetely in *S. multistriatus*. A. Dorsal aspect of lateral region of mesonotum, showing position and relative size of wing pads. B. Outline of leg. C. Outline, drawn to scale, of prothelous larva.

Although the legs had a jointed appearance, there was no evidence of their having any functional significance. The two pairs of wing pads were sclerotized, the posterior pair being somewhat better developed. The wing pads (Fig. 1, A) were flattened sacs, appearing to evaginate from the lateral region of the mesonotum and metanotum. It is presumed that this larva, when found, was in the penultimate stadium, as it molted once and later succumbed (probably from desiccation), when it showed evidence of approaching the prepupal condition.

Another specimen, found in the last larval instar, had legs developed almost as well as the one just described, but only the posterior pair of wing pads was evident. This individual pupated and reached the imaginal stage with no apparent difficulties. The adult form did not appear abnormal in any way, indicating that the presence of premature legs and rudimentary wings had no obvious effect upon the viability of the insect.

Approximately twelve other larvae were observed to bear the abnormality in degrees varying from the above two to larvae possessing slight conical protuberances suggestive of leg structures. No confusion, however, arose between these and the protuberances which characterize the prepupal stage.

In only three cases were wing pads present.

An estimated one fourth of one percent of the beetle larvae showed the abnormality, as the number of larvae examined carefully enough to detect the legs approximated 5,000.

Pruthi (1927) believed that in certain Tenebrionids a combination of larval and pupal characteristics indicated a condition of inhibited metamorphosis to which he applied the term neoteny. There is no doubt that the cases here reported for *S. multistriatus* are conditions of prothetely, as the possession of legs and wing pads was noted in the larval instar preceding the definitive prepupal and pupal stages.

In most cases on record (vide Thomas 1933) prothetely has not been observed on material taken in nature, but on experimental material subjected to unusual environmental conditions. Moreover, such a morphological abnormality has generally prevented normal development. It is of particular interest to note, then, that these prothetelous larvae of *S. multistriatus* were taken from infested elm bark exposed to natural conditions and that of the two most extreme cases, one molted as a larva without difficulty, and the other pupated and developed into an apparently normal adult beetle.

#### LITERATURE CITED.

LANDIS, B. J., and DAVIDSON, R. H. 1934. Prothetely in *Epilachna corrupta* Muls. (Coleop.) Ohio Jour. Science, 34: 147-149.

OOSTHUIZEN, M. J., and SHEPARD, H. H. 1936. Prothetely in larvae of the confused flour beetle, *Tribolium confusum* Jacq.-DuRoi. Ann. Ent. Soc. Amer., 29: 268-272.

PRUTHI, HEM SINGH. 1927. Prothetely in insects. Nature, 119: 391-392.

STONE, M. W. 1938. An occurrence of prothetely in the wireworm *Melanotus longulus* Lec. Pan-Pacific Ent., 14: 16-18.

THOMAS, C. A. 1933. Prothetely in an Elaterid larva (Coleop.) Ent. News, 44: 91-96.